

Dawson DDM180

Pocket-Size Digital Multimeter User's Manual

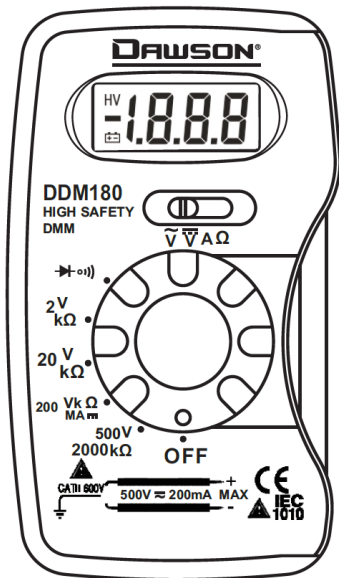


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LIMITED WARRANTY AND LIMITATION OF LIABILITY

This instrument from Dawson Tools Inc. will be free from defects in workmanship and material for three years from the date of original purchase. This warranty does not cover defects resulting from damage caused by the user such as drops, neglect, misuse, unauthorized alteration, usage outside of specified conditions, contamination, or improper repair/maintenance. To receive service on the instrument if it becomes necessary during the warranty period, contact your nearest Dawson authorized service center at (800) 898-6991 or visit www.DawsonTools.com to obtain a return authorization (within the US only). A return authorization is necessary before returning any instrument to Dawson; no service will be provided without a return authorization. The user is responsible for properly packing the unit and charges such as shipping, freight and insurance charges. The extent of Dawson's liability is limited solely to the repair/replacement of the instrument. The above warranty in its entirety is inclusive and no other warranties, written or oral, are expressed or implied.

Out of the Box

Check the Meter and accessories thoroughly before using the Meter. Contact your local distributor if the Meter or any components are damaged or malfunction.

Accessories

- | | |
|-----------------------|-----|
| ▪ Battery 12V, GP-23A | 1pc |
| ▪ Soft Case | 1pc |
| ▪ User Manual | 1pc |

Safety Information:



TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK, PRODUCT DAMAGE OR PERSONAL INJURY, PLEASE FOLLOW THE SAFETY INSTRUCTIONS DESCRIBED IN THE USER MANUAL. READ THE USER MANUALS BEFORE USING THE METER.







DO NOT PLACE THE METER IN ANY ENVIRONMENT OF HIGH PRESSURE, HIGH TEMPERATURE, DUST, EXPLOSIVE GAS OR VAPOR. TO ENSURE SAFE OPERATION AND LIFE OF THE METER, FOLLOW THESE INSTRUCTIONS.

- Avoid shaking, dropping or any kind of impacts when using or transporting the Meter.

- To avoid electric shock or personal injury, repairs or servicing not covered in this manual should be performed only by qualified personnel.
- Avoid direct exposure to sunlight to ensure extended life of the Meter.
- Do not place Meter in a strong magnetic field; this may cause false readings.
- Use only the batteries indicated in the Technical Spec.
- Avoid exposing batteries to humidity. Replace batteries as soon as the low battery indicator appears.
- Temperature and humidity sensitivity of the Meter will be lower over time. Please calibrate the Meter periodically for best performance.
- Please keep the original packing for future shipping purposes (ex. Calibration)
- After opening the box, check for any damage during delivery.
- The Meter should be used in the range of specified ambient temperature and humidity.

SAFETY SYMBOLS

	Important safety information, please refers to the user manual
	Earth ground
	Indicates compliance with requirements for double insulation
	Fuse must be replaced with ratings specified in the manual.

Important Safety Information

- Never use the meter to measure voltages that might exceed **500V** DC/AC above earth ground in category II installations.
- Always be careful when working with voltage above 60V DC or 30VAC RMS. Keep fingers behind the probe barriers while measuring.
- Do not perform resistance measurements on powered circuits.
- Inspect test leads and probes for cracks, breaks or crazes on insulation before using the meter.

- Repair or maintenance should be implemented by trained personnel.

Certification:

This meter has met IEC-1010 standards with an overvoltage category (CAT II) and pollution 2.

Introduction

Overview

This Dawson DDM180 compact digital multimeter is designed to measure AC and DC voltages, DC current, Resistance, Diode and Audible Continuity checks. It is low profile and lightweight with test leads wound on its body, making it easy to carry. It is ideal for electronic and appliance repair, home or commercial use. This instrument will provide years of satisfactory service.

Figures and Components

Buttons and Components


1. **Range Switch** Select desired ranges or turn on/off the meter
2. **Function Switch** Switch between functions
3. **LCD Display** 3 1/2 digit. 7 segments. Maximum 1999 counts
4. **Test Leads** Red positive (+) test lead and black negative (-) test lead

Front Panel



Using the Meter

DC Voltage Measurement

1. Set the function switch to “V  ” position.
2. Set the range switch at desired position. If the magnitude of voltage to be measured is unknown, set the range switch at the highest range and then reduce the range until satisfactory reading is obtained.
3. Connect test leads across the source or load being measured. The polarity of red lead connection will be indicated at the same time as the voltage value.
4. When the range switch is set at 500V position.
“HV” sign will appear on the display to remind user of high voltage measurement. Special attention should be paid.

AC Voltage Measurement

1. Set the function switch to “V~” position.
2. Set the range switch to desired position.
Measurement can be obtained at 2V and 20V positions, but the accuracy is not guaranteed.

3. Connect test leads across the source or load being measured and read the voltage value on the LCD display.
4. When the range switch is set at 500V position, “HV” sign will appear to remind user of high voltage measurement.

DC Current Measurement

1. Set the function switch to “A” position.
2. Set the range switch at “200mA” position.

NOTE:

Measurement reading can be obtained at other positions but the decimal point will be in the incorrect place.

3. Open the circuit in which the current is to be measured and connect test leads in series with the circuit.
4. Read current value on the LCD display along with the polarity of red lead connection.

Resistance Measurement

1. Set the function switch to “ Ω ” position.

NOTE: The polarity of red lead is positive (+)

2. Set the range switch at desired position.

3. Connect test leads across the resistor being measured and read the measurement from the LCD display.
4. If the resistor being measured is connected to a circuit, turn off the power and discharge all capacitors before attaching test leads.

Diode Test

1. Set the function switch to " Ω " position.

NOTE: The polarity of red lead is positive (+)


2. Set the range switch to " $\rightarrow +$ " position.
3. Connect the red test lead to the anode of the diode and the black lead to the cathode.
4. The approx. forward voltage drop of the diode will be displayed in mV. If the connection is reversed, "1" will appear indicating overload.

Audible Continuity Test

1. Set the function switch to " Ω " position.
2. Set the range at " $\rightarrow \parallel$ " position.
3. Connect test leads to two points of the circuit to be tested. If the resistance is less than 50Ω , the Meter will buzz.

Specifications

General Specification

Maximum Voltage	CAT II 600V
Fuse Protection	F 250 mA/250V
Power Supply	12V battery .GP -23AX1
Display	LCD with 1999 counts. Updates 2-3times/sec.
Measuring Method	Dual-slope integration A/D converter
Over Range Indication	"1" on the display
Polarity Indication	"- "Displayed for negative polarity
Operating Temperature	0°C to 40°C (32°F to 104 °F)
Storage Temperature	-10°C to 50°C (10°F to 122 °F)
Low Battery Indication	
Size	120x70x18mm
Weight	Approx.110g

Technical Specification

DC VOLTAGE

Range	Resolution	Accuracy
2V	1mV	$\pm 0.5\%$ of reading ± 1 digit
20V	10mV	$\pm 0.8\%$ of reading ± 1 digit
200mV	100mV	$\pm 0.8\%$ of reading ± 1 digit
500V	1V	$\pm 0.8\%$ of reading ± 1 digit

Overload protection: 500VDC or RMSAC for all ranges

AC VOLTAGE

Range	Resolution	Accuracy
200V	100mV	$\pm 1.2\%$ of reading ± 10 digits
500V	1V	$\pm 1.2\%$ of reading ± 10 digits

Overload protection: 500VDC or RMSAC for all ranges

Frequency range: 45Hz to 450Hz

Measurement algorithm: Average responds

DC CURRENT

Range	Resolution	Accuracy
200mA	0.1mA	$\pm 2.0\%$ of reading ± 2 digits

Overload protection: 250 mA/250V



RESISTANCE

Range	Resolution	Accuracy
2k Ω	1 Ω	$\pm 1.0\%$ of reading ± 2 digits
20k Ω	10 Ω	$\pm 1.0\%$ of reading ± 2 digits
200k Ω	100 Ω	$\pm 1.0\%$ of reading ± 2 digits
2000k Ω	1k Ω	$\pm 1.0\%$ of reading ± 2 digits

Maximum open circuit voltage: 0.65V

Overload protection: 250V RMS AC for all ranges

DIODE TEST


Range	description
	Show the approx. forward voltage drop of the diode.
	Built-in buzzer sounds when resistance is less than 50 Ω .

Overload protection: 250V RMS AC

Maintenance and Repair

Repair

Please follow these steps closely if the Meter is not functioning properly:

- Check batteries; replace with new batteries if low battery indicator “” appears.
- Follow User’s Manual to confirm all procedures.
- Before sending Meter back for repair, include a description of the problems encountered. Remove batteries and pack Meter well to avoid damage in delivery, Dawson does not cover damage due to delivery.
- Repair or service not covered in this manual should be performed only by the authorized service center or qualified personnel.

Replacing Batteries

Follow these steps to replace batteries:

- Turn off the Meter.
- Loosen the battery compartment door and remove the door from the case bottom.
- Remove batteries and replace with new batteries.
- Re-attach the battery compartment door to the case bottom and tighten screw.

Contact Dawson

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Diamond Bar, CA 91765

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www.DawsonTools.com



Do not recycle

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Features

- LCD Display
- Diode Test
- Audible Continuity
- Low Battery Indicator